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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/070,246	06/26/2002	Colin John Hunter	2145-133	4561

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EXAMINER

MCGUTHRY BANKS, TIMA M

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 09/26/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

435/252.4 - mixed culture

Office Action Summary

Application No.

10/070,246

Applicant(s)

HUNTER ET AL.

Examiner

Tima M. McGuthry-Banks

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-30 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 18-30 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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DETAILED ACTION

Claim Objections

1. Claims 19 and 20 are objected to because of the following informalities: the examiner suggests applicants use Markush language. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

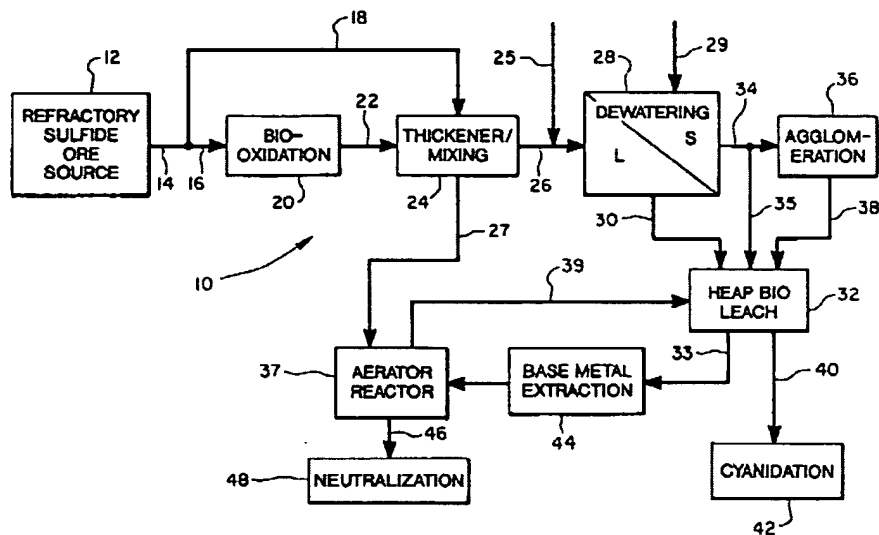
A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 18-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Schaffner et al (US 98/51827).

Schaffner anticipates the claimed invention. Schaffner teaches bioleaching sulfide ore as shown in the figure below:

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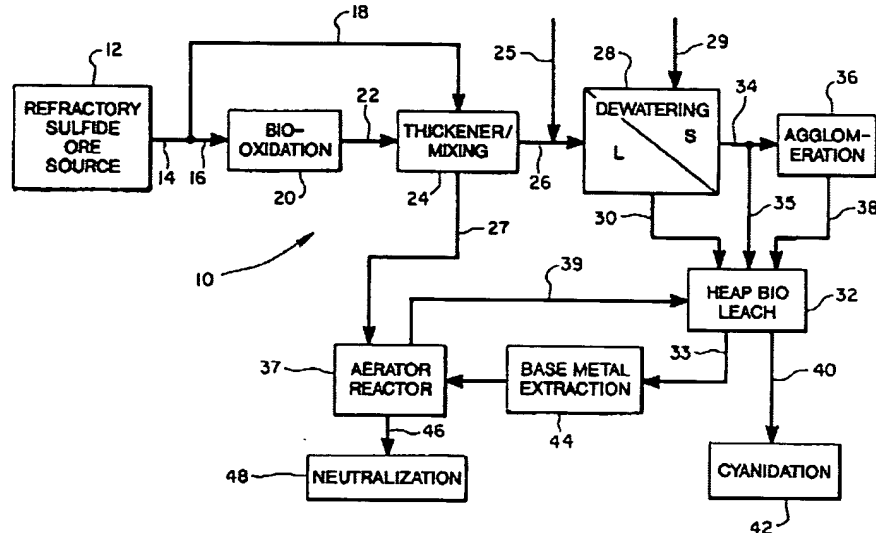


The biooxidation occurs with one or more sulfide-digesting microorganism species (page 10, lines 20-22). The sulfide ore is divided into two portions, where one portion is delivered to the biooxidation reactor to acclimate the sulfide digesting microorganism species to the “diet” provided by that particular refractory sulfide ore (page 10, lines 13-27). The reactor temperature is 30-45° C for *Thiobacillus ferrooxidans* (page 19, lines 3-6). Regarding Claim 19, the leaching can take place in a tank or heap (page 9, line 30). Regarding Claim 20, the metals that can be recovered include gold, silver, platinum, and other base metal values (page 8, lines 14-17). Regarding Claim 21, the ore could be chalcopyrite (page 8, line 19). Regarding Claim 22, Schaffner teaches 45° C.

4. Claim 27 is rejected under 35 U.S.C. 102(b) as being anticipated by Schaffner '827.

Schaffner anticipates the claimed invention. Schaffner teaches bioleaching sulfide ore as shown in the figure below:

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The biooxidation occurs with one or more sulfide-digesting microorganism species (page 10, lines 20-22). The reactor temperature is 30-45° C for *Thiobacillus ferrooxidans* (page 19, lines 3-6). The pH is between 0.7-2.2 (page 17, lines 17 and 18).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schaffner '827 as applied to Claims 18-22 above, and further in view of Hutchins et al (US 4,279,788).

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Schaffner discloses the invention substantially as claimed. Though Schaffner teaches using crushed ore (page 29, line 2), Schaffner does not teach a particle size as claimed. Hutchins teaches thermophilic microbial treatment of metal ores. The leaching temperature is 45-90° C (column 4, lines 12 and 13). 92.7% of the ore is less than 200 mesh (75 micron aperture). It would have been obvious to one with ordinary skill in the art at the time the invention was made to use the particle size taught by Hutchins, since it has been held that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller*, 105 USPQ 233. It is also well known in the art that small particle size leads to greater surface area, which further leads to greater reaction rates.

7. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schaffner '827 as applied to Claims 18-22 above, and further in view of Kohr et al (US 6,110,253).

Schaffner discloses the invention substantially as claimed. Though Schaffner lists examples of bacteria that can be used in a mixture for bioleaching, Schaffner does not teach *Thiobacillus caldus* or *Sulfobacillus thermosulfidooxidans* as claimed. Kohr teaches heap-leaching chalcopyrite ore using thermophilic microorganisms. Examples of microorganisms include *Thiobacillus ferrooxidans*, *Thiobacillus organoparus*, *Thiobacillus acidophilus*, *Leptospirillum ferrooxidans*, *Sulfobacillus thermosulfidooxidans*, *Thiobacillus caldus*, and *Thiobacillus cuprinus* (column 14, lines 59-65). It would have been obvious to one with ordinary skill in the art at the time the invention was made to use *Thiobacillus caldus* or

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Sulfobacillus thermosulfidooxidans in the bioleaching mixture of Schaffner, since Kohr teaches that these bacteria are capable of biooxidizing sulfide minerals (column 14, lines 55-57).

8. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schaffner '827.

Schaffner discloses the invention substantially as claimed. However, Schaffner does not specifically claim the adaptation scenario as claimed. It would have been obvious to one with ordinary skill in the art at the time the invention was made that acclimation step taught by Schaffner reads on reaching a plateau, since Schaffner teaches that the leaching occurs during a specific time period, based on the ore (page 16, lines 28 and 29). The reactor temperature is 30-45° C (page 19, line 6). The pH is between 0.7-2.2 (page 17, lines 17 and 18).

9. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schaffner '827 as applied to Claim 27 above, and further in view of Kohr '253.

Schaffner discloses the invention substantially as claimed. Though Schaffner lists examples of bacteria that can be used in a mixture for bioleaching, Schaffner does not teach *Thiobacillus caldus* or *Sulfobacillus thermosulfidooxidans* as claimed. Kohr teaches heap-leaching chalcopyrite ore using thermophilic microorganisms. Examples of microorganisms include *Thiobacillus ferrooxidans*, *Thiobacillus organoparus*, *Thiobacillus acidophilus*, *Leptospirillum ferrooxidans*, *Sulfobacillus thermosulfidooxidans*, *Thiobacillus caldus*, and *Thiobacillus cuprinus* (column 14, lines 59-65). It would have been obvious to one with ordinary skill in the art at the time the invention was made to use *Thiobacillus caldus* or

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Sulfobacillus thermosulfidooxidans in the bioleaching mixture of Schaffner, since Kohr teaches that these bacteria are capable of biooxidizing sulfide minerals (column 14, lines 55-57).

10. Claims 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schaffner '827 as applied to Claim 27 above, and further in view of Hutchins '788.

Schaffner discloses the invention substantially as claimed. Though Schaffner teaches using crushed ore (page 29, line 2), Schaffner does not teach a particle size as claimed. Hutchins teaches thermophilic microbial treatment of metal ores. The leaching temperature is 45-90° C (column 4, lines 12 and 13). 92.7% of the ore is less than 200 mesh (75 micron aperture). It would have been obvious to one with ordinary skill in the art at the time the invention was made to use the particle size taught by Hutchins, since it has been held that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller*, 105 USPQ 233. It is also well known in the art that small particle size leads to greater surface area, which further leads to greater reaction rates.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tima M. McGuthry-Banks, whose telephone number is 703-308-1917. The examiner can normally be reached on 9:30-3:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King, can be reached on 703-308-1146. The fax numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist, whose telephone number is 703-308-0651.


Tima M. McGuthry-Banks
Examiner
Art Unit 1742

September 25, 2002